REMARKS

Claims 1-18 are pending. Claims 1-3, 9, and 13 are amended with this response. Reconsideration of the application is respectfully requested for at least the following reasons.

I. OBJECTION TO CLAIMS 1-12

Claims 1-12 were objected to for failing to have a transitional phrase in the claims. The claims have been amended to address this issue. Accordingly, withdrawal of the objection for these claims is respectfully requested.

II. REJECTION OF CLAIMS 13-18 UNDER 35 U.S.C. § 101

Claims 13-18 were rejected under 35 U.S.C. § 101 as not falling within one of the four statutory categories of invention. Withdrawal of the rejection is respectfully requested for at least the following reasons.

Under 35 U.S.C. 101, "[a] claimed process is surely patent-eligible under § 101 if: (1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing." In re Bilski, 545 F.3d 943 (Fed. Cir. 2008). As amended the claims properly satisfy both prongs of this test and therefore the claims are a properly claimed process.

Claim 13 has been amended to satisfy the first prong of the Bilski test. More particularly, the method of claim 13 is configured to utilize a device which produces FSM bits that influence signals sent from a base station. Therefore, the method is tied to a base station configured to send out signals from a first and a second antenna. Accordingly, withdrawal of the rejection for these claims and dependent claims is respectfully requested.

III. REJECTION OF CLAIMS 1-4, 8-9, AND 12-16 UNDER 35 U.S.C. § 103(a)

Claims 1-4, 8-9, and 12-16 were rejected under 35 U.S.C. § 103(a) as being unpatentable in view of U.S. Pat. No. 7,116,723 (Kim et al.). Withdrawal of the rejection is respectfully requested for at least the following reasons.

i. Kim et al. fail to teach a device configured to determine a first FSM bit using first components of two channel impulse responses and a second FSM bit using second components of the two channel impulse responses, wherein the first and second components comprise different components, as recited in claim 1.

Claim 1 relates to a device for calculating feedback signaling message (FSM) bits, comprising a circuit configured to calculate FSM bits. The circuit is configured to generate a first complex phasor from first components of two channel impulse responses and a second complex phasor from second components of the two channel impulse responses, wherein the first and the second components of the two channel impulse responses comprise different components. The circuit is further configured to produce a first FSM bit by a rotation and projection of the first phasor and a comparison of the rotated and projected first phasor with a constant threshold value and configured to produce a second FSM bit by a rotation and projection of the second phasor and a comparison of the rotated and projected second phasor with the constant threshold value. The Office Action alleges that Kim et al. teach over claim 1 of the present invention. (*See, O.A. of 3/2/09,* p. 3 lns. 19 –25). However, as will be more fully appreciated below, Kim et al. fail to teach a circuit configured to ***determine a first FSM bit using first components of two channel impulse responses and a second FSM bit using second components of the two channel impulse responses, wherein the first and second components comprise different components.***

More particularly, Kim et al. teach a receiving apparatus for transmission antenna diversity in a wireless communication system comprising a transmission antenna diversity channel information measuring unit 310 configured to receive a signal

Rx from a base station comprising a plurality of antennas. (*See, e.g.,* Fig. 3 and 4). The received signal Rx is relayed to a basis vector transformer 320 as a channel information matrix H comprising the channel impulse responses h_i of respective channels. (*See, e.g.,* col. 7, lns. 59-62). The basis vector transformer 320 ***transforms the matrix H using a transform matrix*** B_W and then relays the transformed matrix H_{BW} to an optimum weight detector 330 configured to determine an index information, to maximize reception power, that is fed back to the base station by an information uplink signal processor 340. (*See*, col. 7, lns. 53-62, and col. 7, lns. 23-31). Therefore, as taught by Kim et al. the receiving apparatus determines a FSM bit by operating (with transform matrix B_W) ***upon the received components (H) of a plurality of antennas, as a whole, to determine a single FSM bit***.

In contrast to Kim et al., claim 1 relates to determining a first FSM bit ***from first components*** and a second FSM bit ***from second components, wherein the first and second components comprise different components***. In other words, in claim 1 the first and second FSM bits ***are determined from first and second different components, as opposed to Kim et al. who teach determining an FSM bit from an information matrix comprising all of the received components.*** Accordingly, Kim et al. fail to teach over claim 1 and therefore, withdrawal of the rejection is respectfully requested.

Claim 13 relates to method for calculating feedback signaling message (FSM) bits, comprising producing a first complex phasor from first components of two channel impulse responses and a second complex phasor from second components of the two channel impulse responses, and calculating a first FSM bit by rotation and projection of the first phasor and a second FSM bit by rotation and projection of the second phasor. As stated above, Kim et al. fail to teach ***determining a first FSM bit using first components of two channel impulse responses and a second FSM bit using second components of the two channel impulse responses, wherein the first and the second components are different.*** Accordingly, withdrawal of the rejection of claim 13 is respectfully requested.

Claims 2-4, 8-9, and 12 depend upon claim 1, and add further limitations thereto. Claims 14-16 depend upon claim 13, and add further limitations thereto. Because Kim et al. fail to teach the present invention of claims 1 or 13, claims 2-4, 8-9, 12, and 14-16 are also not taught by the cited art. Accordingly, withdrawal of the rejection is respectfully requested.

ii. Kim et al. fail to teach a device configured to produce first and second FSM bits by a rotation and projection of the phasor and a comparison of the rotated and projected phasor with a constant threshold value, as recited in claim 1.

Claim 1 relates to a device for calculating feedback signaling message (FSM) bits, comprising a circuit configured to calculate FSM bits, wherein the circuit is configured to generate a first complex phasor from first components of the two channel impulse responses and a second complex phasor from second components of the two channel impulse responses, and is further configured to produce a first FSM bit by a rotation and projection of the first phasor and a comparison of the rotated and projected phasor with a constant threshold value and a second FSM bit by a rotation and projection of the second phasor and a comparison of the rotated and projected second phasor with the constant threshold value. The Office Action alleges that this aspect of the claim 1 is taught by Kim et al. in col. 7, lns. 23-27. (*See, O.A. of 3/02/09,* p. 3, ln. 26 – p. 4, ln. 2). However, as will be more fully appreciated below, Kim et al. fail to teach a device ***configured to produce first and second FSM bits by a rotation and projection of the phasor and a comparison of the rotated and projected phasor with a constant threshold value.***

As stated above, Kim et al. teach a receiving apparatus configured to relay a received signal Rx (*i.e.,* a SINR) to a basis vector transformer 320, as a channel information matrix H composed of L*M elements (wherein L is the number of antennas, and M is the number of multipath channels for each antenna). (*See, e.g.,* Fig. 3, and col. 9, lns. 23-35). The basis vector transformer 320 transforms the information matrix

using a transform matrix B_W and relays the transformed matrix H_{BW} to an optimum weight detector 330. The optimum weight detector 330 detects a maximized element of the matrix ***from among the plurality of channel signals***. More particularly, the optimum weight detector maximizes reception power by ***obtaining a single maximum value from the value of norms for each column of the transformed matrix (e.g., for each of the plurality of channel signals)***. (*See, e.g.,* col. 8, lns. 1-7). Therefore, as taught by Kim et al. the reception power is maximized relative to the respective channel impulse responses, wherein the respective channel impulse responses are ***dependent upon a dynamically changing received signal***.

In contrast, claim 1 relates to a FSM bit that is determined by a comparison of a rotated and projected phasor with ***a constant threshold value***. Because Kim et al. teach determining a maximum reception power based upon a dynamic received signal as opposed to a constant threshold value, they fail to teach over claim 1 of the present invention. Accordingly, for at least this additional reason, the rejection of claim 1 is respectfully requested.

IV. REJECTION OF CLAIMS 10-11 AND 17-18 UNDER 35 U.S.C. § 103(a)

Claims 10-11 and 17-18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 7,116,723 B2 (Kim et al.) as applied to claims 1 and 13 above, and further in view of U.S. Patent No. 6,611,675 B1 (Salonen). Withdrawal of the rejection is respectfully requested for at least the following reasons.

As stated above, the cited art fails to teach the present invention of claim 1 and 13. Claims 10-11 depend upon claim 1, and add further limitations thereto. Claims 17-18 depend upon claim 13, and add further limitations thereto. Because the cited art does not teach over the present invention of claims 1 and 13, claims 10-11 and 17-18 are not taught by the cited art. Accordingly, withdrawal of the rejection is respectfully requested.

V. REJECTION OF CLAIMS 1 AND 13 UNDER 35 U.S.C. § 103(a)

Claims 1 and 13 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 7,116,723 B2 (Kim et al.) in view of U.S. Patent No. 6,611,675 B1 (Salonen). Withdrawal of the rejection is respectfully requested for at least the following reasons.

As stated above, the cited art ***fails to teach determining a first FSM bit using first components of two channel impulse responses and a second FSM bit using second components of the two channel impulse responses, as recited in claims*** claim 1 and 13. Claims 10-11 depend upon claim 1, and add further limitations thereto. Claims 17-18 depend upon claim 13, and add further limitations thereto. Because the cited art does not teach over the present invention of claims 1 and 13 and because Salonen fails to remedy this deficiency, claims 10-11 and 17-18 are not taught by the cited art. Accordingly, withdrawal of the rejection is respectfully requested.

VI. CONCLUSION

For at least the above reasons, the claims currently under consideration are believed to be in condition for allowance.

Should the Examiner feel that a telephone interview would be helpful to facilitate favorable prosecution of the above-identified application, the Examiner is invited to contact the undersigned at the telephone number provided below.

Should any fees be due as a result of the filing of this response, the Commissioner is hereby authorized to charge the Deposit Account Number 50-1733, LLP145WOUS.

Respectfully submitted,
ESCHWEILER & ASSOCIATES, LLC

By /Thomas G. Eschweiler/
Thomas G. Eschweiler
Reg. No. 36,981

National City Bank Building
629 Euclid Avenue, Suite 1000
Cleveland, Ohio 44114
(216) 502-0600